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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/700,833	06/07/2001	Olaf Duebel	11150/29	2893

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EXAMINER	
CREPEAU, JONATHAN	
ART UNIT	**PAPER NUMBER**
1746	

DATE MAILED: 11/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/700,833	DUEBEL ET AL.	
	Examin r	Art Unit	
	Jonathan S. Crepeau	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 August 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3,8* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 17-40. All the claims are newly rejected under 35 USC §102 and §103 herein. Since the new rejections were not necessitated by amendment, this action is non-final.

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

Non-initialed and/or non-dated alterations have been made to the oath or declaration (in particular to inventor Jessica Reinkingh's address). See 37 CFR 1.52(c).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this

subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 17, 19, 30-32, 34, 39, and 40 are rejected under 35 U.S.C. 102(e) as being anticipated by Kawatsu et al (U.S. Patent 6,120,925).

Regarding claims 17 and 32, the reference is directed to a fuel cell system comprising a reformer unit (32), a fuel cell unit (20), and a CO selective oxidation device (34) disposed between the reformer unit and the fuel cell unit (see Fig. 1). As shown in Figures 7 and 8 and described in column 14, line 46 et seq., a water injection device (80) is disposed at the oxidation device and is configured to inject water therein. Regarding claims 19, 30, 31, 39, and 40, the material to be reformed is liquid methanol (see col. 10, line 44). Regarding claim 34, the water is injected as an aerosol (see col. 14, line 46 et seq.).

Thus, the instant claims are anticipated.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 17, 22-25, 28-30, 32, 34-37, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buswell et al (U.S. Patent 5,630,679) in view of Kawatsu et al.

Regarding claims 17, 28, and 32, Buswell et al. is directed to a fuel cell system comprising a reformer unit (168), a fuel cell unit (186), and a CO selective oxidation device (142) disposed between the reformer unit and the fuel cell unit (see Fig. 1). Regarding claims 30 and 39, the raw material is a hydrogen-containing material such as natural gas (see col. 7, line 38). Regarding claims 22, 28, 29, and 35, the system comprises a two-stage compressor (130, 134) configured to supply compressed air to a cathode of the fuel cell unit (see col. 6, line 50 et seq.). Regarding claim 28, expanders are disposed in the cathode exhaust stream and are connected to the compressors via common shafts (see Fig. 1). Regarding claim 37, the exhuast gas (24) from the fuel cell anode is burned in a burner (29) and the generated heat is supplied to the reforming process (see col. 8, line 29). Regarding claims 23, 24, and 36, the system comprises water separators (i.e., condensers) (188, 189) disposed in the cathode and anode exhaust streams. The separated water is supplied to a point upstream of the reformer (see col. 8, lines 12-16). Regarding claim 25, a water circulation loop (42, 43) is configured to cool the fuel cell (see Fig. 1).

Buswell et al. do not expressly teach that the selective oxidation unit comprises a water injection device, as recited in claims 17, 28, and 32.

As set forth above, Kawatsu et al. teach a selective oxidation unit comprising a water injection device.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the selective oxidation unit of Kawatsu et al. in the system of Buswell et al. In the abstract, Kawatsu et al. teach the injection of water into their oxidation unit "enhances the cooling efficiency and

enables all the selective CO oxidizing catalysts 50 stored in the selective CO oxidizing unit 34 to be maintained in the active temperature range, thus sufficiently reducing the concentration of carbon monoxide included in a resulting gaseous fuel." Accordingly, the artisan would be motivated to use the selective oxidation unit including the water injection device of Kawatsu et al. in the system of Buswell et al.

7. Claims 17-21, 30-35, 39, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Negishi (U.S. Patent 6,165,633) in view of Kawatsu et al.

Regarding claims 17, 18, 20, 32, and 33, Negishi is directed to a fuel cell system comprising a reformer unit (31), a fuel cell unit (40), and a CO selective oxidation device (26) disposed between the reformer unit and the fuel cell unit (see Fig. 1). Regarding claims 19, 30, 31, 39, and 40, the material to be reformed is liquid methanol (see col. 12, line 2). Regarding claims 18 and 33, the system includes a drive system of a motor vehicle (see col. 10, line 62). Regarding claims 20 and 21, the reformer includes a mixer configured to mix the methanol and an oxygen-containing substance (e.g., air) (see Fig. 1; col. 17, line 38 et seq.). Regarding claim 35, compressed air is supplied to the fuel cell cathode (see col. 14, line 42).

Negishi do not expressly teach that the selective oxidation unit comprises a water injection device, as recited in claims 17, 20, 28, 32, and 33.

As set forth above, Kawatsu et al. teach a selective oxidation unit comprising a water injection device.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the selective oxidation unit of Kawatsu et al. in the system of Negishi. In the abstract, Kawatsu et al. teach the injection of water into their oxidation unit "enhances the cooling efficiency and enables all the selective CO oxidizing catalysts 50 stored in the selective CO oxidizing unit 34 to be maintained in the active temperature range, thus sufficiently reducing the concentration of carbon monoxide included in a resulting gaseous fuel." Accordingly, the artisan would be motivated to use the selective oxidation unit including the water injection device of Kawatsu et al. in the system of Negishi.

8. Claims 17-19, 26, 27, 30, 31, 33, 35, 38, 39, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pettit (U.S. Patent 6,077,620) in view of Kawatsu et al.

Regarding claims 17, 18, 26, 32, 33, and 38, Pettit is directed to a fuel cell system comprising a reformer unit (2), a fuel cell unit (16), and a CO selective oxidation device (14) disposed between the reformer unit and the fuel cell unit (see Fig. 1). Regarding claims 19, 30, 31, 39, and 40, the material to be reformed is liquid methanol (see Figure 1). Regarding claims 18 and 33, the system includes a drive system of a motor vehicle (see col. 1, line 44; col. 3, line 52). Regarding claims 26, 37, and 38, a catalytic burner (28) is configured to combust exhaust gas (20) from the anode and to direct waste heat to the reformer via line 32 (see Fig. 1). Regarding claims 27 and 38, the burner is connected to a supply tank for supplying raw methanol

(50) (see Fig. 1). Regarding claim 35, compressed air is supplied to the fuel cell cathode (see Fig. 1).

Pettit does not expressly teach that the selective oxidation unit comprises a water injection device, as recited in claims 17, 18, 26, 32, 33, and 38.

As set forth above, Kawatsu et al. teach a selective oxidation unit comprising a water injection device.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the selective oxidation unit of Kawatsu et al. in the system of Pettit. In the abstract, Kawatsu et al. teach the injection of water into their oxidation unit "enhances the cooling efficiency and enables all the selective CO oxidizing catalysts 50 stored in the selective CO oxidizing unit 34 to be maintained in the active temperature range, thus sufficiently reducing the concentration of carbon monoxide included in a resulting gaseous fuel." Accordingly, the artisan would be motivated to use the selective oxidation unit including the water injection device of Kawatsu et al. in the system of Pettit.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051 (prior to December 17, 2003) or (571) 272-1299 (after December 17, 2003). The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (703) 308-4333. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 872-9310 (for non-final communications) or (703) 872-9311 (for after-final communications).

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JSC

October 24, 2003

RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700